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ASSESSMENT OF ANNUALLY
COLLECTED GROUNDWATER SAMPLES
RCRA IMPOUNDMENT
CABOT CORPORATION PLANT
TUSCOLA, ILLINOIS

(U.S. EPA I.D. No. ILD042075333)

December, 1985

The purpose of this report is to assess the rate and extent of migration and the concentration of Hazardous waste constituents in the groundwater beneath the plant property in vertical and horizontal directions based on the annual sampling.

Monitoring System

As approved by the lEPA, 12 wells out of 17 make up the monitoring system for the impoundment at the Cabot plant (Figure 1, in pocket). G108 has been taken out of service recently because it was in the construction area of the new storage tank. Thus, there are 11 wells in the monitoring system now. Of the 11 wells, G101 is the upgradient well and the rest are downgradient from the impoundment. G109, G114, G117 and G118 are the deep monitoring wells. The remaining six wells are relatively shallow. Three well clusters (G106/ G109/ G114/, G111/ G118, and G116/ G117) were installed to assess vertical migration of hazardous waste constituents.

Parameters Analyzed and Assessment Methods

Prior to collection of the water samples, depth to water was measured and water level elevations were determined in the wells at the plant (Table 1). The annual samples were collected from the 11 monitoring wells on October 8, 9 and 23, 1985, and

monitoring wells at the Cabot Plant on October 7, 1985.

WELL NUMBER	GROUND ELEVATION* ft.	MEASUREMENT		LEVEL DIFFERENCE IN PAIRED WELLS, ft.
		Depth to Water, ft.	Elevation* of Water level, ft.	
- G101	693.44	3.00	690.44	
MW-2	690.68	4.75	688.43	
MW-3	690.87	4.16	686.71	
MW-4	686.90	3.92	682.98	
MW-5	694.04	4.90	689.14	
G106	691.84	3.42	688.42	
G109	691.59	26.17	665.42	23.00
G114	691.75	31.94	659.81	5.61
G107	690.60	5.00	685.60	
- G110	689.66	3.08	686.58	
- G111	686.64	4.41	682.23	
G118	686.27	27.70	658.57	23.66
- G112	690.97	4.41	686.56	
G113	689.05	8.42	680.63	
- G116	688.92	4.19	684.73	
G117	689.03	13.99	675.04	9.69

*Elevations are above MSL

Table 2. Concentrations of hazardous waste constituents, pH, and specific conductivity of the groundwater samples collected from the monitoring wells in October 1985, Cabot Corporation plant, Tuscola, Il.

	G101	G106	G109	G107	G110	G111	G112	G114	G116	G117	G118
Tetrachloroethylene T µg/l	<1	690	450	65	<1	<1	<1	540	12	<1	<1
Toluene T µg/l	<1	<1	<1	<1	<1	11	10	<1	<1	<1	<1
Trichloroethylene T µg/l	<1	<1	23	<1	<1	<1	<1	34	<1	<1	<1
1,2,t Dichloroethylene µg/l	<1	<1	26	<1	<1	<1	<1	250	<1	<1	<1
pH, units	7.26	3.81	6.69	6.05	7.31	7.28	7.54	7.05	7.20	12.16	9.07
SC, µmhos	1240	33967	2646	47281	1043	1064	724	1890	858	2646	1025

CONCLUSIONS

Based on the analyses made for the annual sampling, the following are concluded:

1. Regional flow direction of groundwater is towards southeast.
2. A groundwater mound has formed beneath the impoundment due to migration of waste fluids from the impoundment.
3. The impoundment has been leaking. The leakage has caused contamination of the shallow and relatively deep groundwater near the impoundment.
4. Contamination at G114 indicates that some hazardous waste constituents have traveled vertically at least 75 ft.
5. Fewer number (four) of hazardous waste constituents in lower concentrations have been identified and measurable in the contaminated groundwater samples for this annual report than those for both the previous annual report and the last quarterly report.
6. The concentrations of the hazardous waste constituents in the groundwater is in ppb level. The highest was tetrachloroethylene as 690 µg/l.
7. A source located west has contributed to the relatively high SC and sulfate in the upgradient well.
8. The deeper groundwater at the eastern and southeastern parts of the plant grounds is uncontaminated.
9. It is estimated that the contaminated groundwater flow has traveled a distance of 424 feet.